AUTOMATIC SHUTOFF FOR WIRELESS ENDPOINTS IN MOTION

TECHNICAL FIELD

This invention relates generally to wireless switching systems and, in particular, to control of a wireless telephone.

BACKGROUND OF THE INVENTION

Studies have indicated that talking on a wireless telephone while driving increases the risk of an accident. Part of the increased risk is attributed to drivers being distracted by a wireless telephone ringing. This risk can be abated by the users turning their wireless telephones off when they enter a vehicle and turning it on when they exit or come to a complete stop. However, few users perform these actions every time they enter or exit a vehicle. Certain foreign countries make it illegal to utilize a wireless telephone at anytime while driving an automobile. However, a user could easily forget about this prohibition and originate or receive a call while driving an automobile.

SUMMARY OF THE INVENTION

The foregoing problems are solved, and a technical advance is achieved by an apparatus and method in which a wireless telephone does not generate an alerting signal for an incoming call if the speed at which the wireless telephone is moving exceeds a predefined speed. Advantageously, if an alerting signal is not generated for an incoming call, the wireless telephone transmits an audio message back to the calling party informing them that they have contacted the wireless telephone and may leave either a voice or data message. Further, the wireless telephone must have been below the predefined speed for a predefined amount of time before the alerting signal will be generated. The caller can then either leave a voice message or touch tone in the caller's telephone number. Further, the wireless telephone can inhibit the origination of calls from the wireless telephone if the speed of the wireless telephone exceeds the predefined speed. In addition, if the speed has not been equal or less than the predefined speed for a predefined amount of time, call originations are blocked.

These and other features and advantages of the present invention will become more apparent from the following description of an illustrative embodiment of the invention considered together with the drawing.

BRIEF DESCRIPTION OF THE DRAWING

FIG. **1** illustrates, in block diagram form, a wireless telephone; and

FIGS. **2** and **3** illustrate, in flowchart form, steps performed by a wireless telephone.

DETAILED DESCRIPTION

FIG. **1** illustrates in block diagram form, a wireless telephone for implementing the invention. Overall control of the wireless terminal is provided by control unit **101**. Units **102**, **103**, **106**, **107**, **108**, and **109** provide the RF communication capabilities for the wireless terminal. Units **106** and **103** are connected by link **115**. Elements **104**, **110**, and **111–114** provide the audio information received and transmitted to the user; whereas, elements **116–118** and **105** provide the basic user interface. Memory **119** is used to store data such as voice announcements that control unit **101** transmits to a caller via elements **103** and **104**. Speed transceiver **129** is designed to receive information that is used by control unit to calculate the speed at which the wireless terminal is traveling.

When control unit **101** detects that an incoming call is being received via elements **102–108**, control unit **101** determines what the speed is by reading the output of speed transceiver **129**. Speed transceiver **109** is interconnected to a global positioning satellite (GPS) device. (Control unit **101** is responsive to the changing position information from the GPS device to determine the speed at which the wireless telephone is moving. One skilled in the art can readily see that in the case of a wireless telephone that is designed to be connected to an automobile, that speed transceiver **129** could be receiving information from the speedometer of the automobile. In addition, positioning methods other than a GPS device could be utilized to determine the speed based on change of position. If control unit **101** determines that the speed is above a predefined amount, it does not alert the user of the wireless telephone via audio transducer **117** or vibration transducer **118**. Rather, control unit **101** transmits a voice message to the caller defining that the call is not being answered because the user is presently driving. The voice message is initially stored in memory **119** as a digital audio message. Control unit **101** then prompts the caller to leave either a voice message or their telephone number which may be inputted using multi-frequency tones. Control unit **101** does not give the user access to the recorded information until the wireless telephone has ceased to move at a rate in access of the predefined speed. Advantageously, the predefined speed may be 5 mph. In addition, control unit **101** does not allow the user to originate a call if the speed is in excess of the predefined speed.

Further, in order to prevent a user from originating or receiving a telephone call while momentarily stopped, control unit **101** requires that the vehicle be below the predefined speed for a predefined amount of time before a call can be received or originated by the user. Advantageously, the predefined amount of time is 30 seconds.

FIGS. **2** and **3** illustrate the steps performed by control unit **101** of the wireless telephone in implementing the invention. Once started, decision block **201** determines if it is time to read new coordinates. These coordinates will be read via speed transducer **129** from GPS device **124** that may be internal or external to the wireless telephone. The coordinates are read at predefined intervals. If the answer is yes in decision block **201**, block **202** reads the coordinates via speed transducer **129**. Control unit **101** then calculates the present speed by execution of block **203**. The calculation of this speed is based on the distance between the old coordinates and the new coordinates. After execution of block **203**, control is transferred back to decision block **201**.

Returning to decision block **201**, if the answer is no, decision **204** determines if an incoming call is being received. If the answer is yes, decision block **206** determines if the present speed is below the limit for a predefined amount of time. If the answer is no, block **207** answers the call and transmits a message to the caller informing them that the wireless telephone cannot accept the message at this time but the caller has the ability to leave a message. If the caller chooses to leave a message, this message is recorded and stored in memory **119** using well known techniques before control is transferred back to decision block **201**. If the answer is yes in decision block **206**, block **208** performs normal processing for returning control back to decision block **201**.

Returning to decision block **204**, if a new call is not being received, control is transferred to decision block **209** from